CLAIMS

1. A method for balancing the distribution of interference between radio cells in a wireless communication system, the system comprising a plurality of radio cells in which a plurality of subcarrier blocks is used for communication, wherein each subcarrier block comprises a plurality of subcarriers, wherein a number of adjacent radio cells build a cell cluster, the method comprising the steps of:

    grouping said subcarrier blocks into a plurality of subcarrier block sets in each radio cell of the cell cluster,

    determining a plurality of transmission power ranges for each of the radio cell of said cell cluster, wherein a transmission power range defines a range of transmission power levels used for transmission power control,

    assigning the plurality of transmission power ranges to the subcarrier block sets of radio cells of the cell cluster.

2. The method according to claim 1, wherein the radio cells of the cell cluster each comprise corresponding subcarrier block sets having the same subcarriers.

3. The method according to claim 2, wherein said plurality transmission power ranges is assigned to the subcarrier block sets of radio cells of the cell cluster, such that

    in a single radio cell, there is a mapping of each of said plurality of transmission power ranges to a subcarrier block set of said single radio cell, and

    there is a mapping of each of said plurality of transmission power ranges to one of said corresponding subcarrier block sets in the radio cells of said cell cluster.

4. The method according to claim 2 or 3, wherein said plurality transmission power ranges is assigned to the subcarrier block sets of radio cells of the cell cluster, such that

    in a single radio cell, there is a mapping of each of said plurality of subcarrier block sets of said single radio cell to a transmission power range, and

there is a mapping of each of said corresponding subcarrier block sets in the radio cells of said cell cluster to one of said plurality of transmission power ranges.

5. The method according to claim 3 or 4, wherein the mapping is a unique or one-to-one mapping.

6. A method for balancing the distribution of interference between radio cells in a wireless communication system, the system comprising a plurality of radio cells in which a plurality of subcarrier blocks is used for communication, wherein each subcarrier block comprises a plurality of subcarriers, wherein N adjacent radio cells build a cell cluster, N being an integer number of 2 or more, the method comprising the steps of:

grouping said subcarrier blocks into N subcarrier block sets in each radio cell of the cell cluster, wherein the radio cells of the cell cluster each comprise corresponding subcarrier block sets having the same subcarriers,

determining N transmission power ranges for each of the radio cell of said cell cluster, wherein a transmission power range defines a range of transmission power levels used for transmission power control,

assigning N transmission power ranges to the N subcarrier block sets of radio cells of the cell cluster, such that

each of the N transmission power ranges in a radio cell is assigned to one of the N subcarrier block sets of said radio cell, and

each of the N transmission power ranges is assigned to one subcarrier block set of corresponding subcarrier block sets.

7. A method for balancing the distribution of interference between radio cells in a wireless communication system, the system comprising a plurality of radio cells in which a plurality of subcarrier blocks is used for communication, wherein each subcarrier block comprises a plurality of subcarriers, wherein N adjacent radio cells build a cell cluster, N being an integer number of 2 or more, the method comprising the steps of:

grouping said subcarrier blocks into x·N subcarrier block sets in each radio cell of the cell cluster, wherein the radio cells of the cell cluster each comprise corresponding subcarrier block sets having the same subcarriers, x being an integer number of 1 ore more,

determining y·N transmission power ranges for each of the radio cell of said cell cluster, wherein a transmission power range defines a range of transmission power levels used for transmission power control, y being an integer number of 1 ore more,

assigning y·N transmission power ranges to the x·N subcarrier block sets of radio cells of the cell cluster, such that

> each of the y·N transmission power ranges in a radio cell is assigned to one of the x·N subcarrier block sets of said radio cell, and

> y/x transmission power ranges on average are assigned to one subcarrier block set of corresponding subcarrier block sets.

8.   A method for balancing the distribution of interference between radio cells in a wireless communication system, the system comprising a plurality of radio cells each of them comprising at least two sectors, wherein in each sector a plurality of subcarrier blocks is used for communication, wherein each subcarrier block comprises a plurality of subcarriers, wherein a number of adjacent radio cells build a cell cluster, the method comprising the steps of:

grouping said subcarrier blocks into a plurality of subcarrier block sets in each of the sectors of each radio cell of said cluster,

determining a plurality of transmission power ranges for each sector of each radio cell of the cell cluster, wherein a transmission power range defines a range of transmission power levels used for transmission power control,

assigning the plurality of transmission-power ranges to the plurality of subcarrier block sets of a sector of a radio cell and its adjacent sectors of said other radio cells.

9.   The method according to claim 8, wherein each sector of a radio cell has adjacent sectors in the other radio cells of the cell cluster, and wherein a sector of a radio

cell and its adjacent sectors in said other radio cells build a sector cluster and each comprise corresponding subcarrier block set having the same subcarriers.

10.   The method according to claim 9 wherein said plurality of transmission power ranges is assigned to the subcarrier block sets of radio cells of the cell cluster, such that

in a single sector of a radio cell, there is a mapping of each of said plurality of transmission power ranges to a subcarrier block set of said sector, and

there is a mapping of each of said plurality of transmission power ranges to one of said corresponding subcarrier block sets in said sector cluster.

11.   The method according to claim 9 or 10, wherein said plurality of transmission power ranges is assigned to the subcarrier block sets of radio cells of the cell cluster, such that

in a single sector of a radio cell, there is a mapping of each of said plurality of subcarrier block sets of said sector to a transmission power range, and

there is a mapping of each of said plurality of said corresponding subcarrier block sets in said sector cluster to one transmission power range.

12.   The method according to claim 10 or 11, wherein the mapping is a unique or one-to-one mapping.

13.   A method for balancing the distribution of interference between radio cells in a wireless communication system, the system comprising a plurality of radio cells each of them comprising at least two sectors, wherein in each sector a plurality of subcarrier blocks is used for communication, wherein each subcarrier block comprises a plurality of subcarriers, and wherein a number of adjacent radio cells build a cell cluster, the method comprising the steps of:

grouping said subcarrier blocks into N subcarrier block sets in each of the sectors of each radio cell of said cluster, wherein each sector of a radio cell has N-1 adjacent sectors in the other radio cells of the cell cluster, and wherein a sector of a radio cell and its adjacent sectors in said other radio cells each comprise

corresponding subcarrier block set having the same subcarriers, N being an integer number of 2 or more,

determining N transmission power ranges for each sector of each radio cell of the cell cluster, wherein a transmission power range defines a range of transmission power levels used for transmission power control,

assigning the N transmission power ranges to the N subcarrier block sets of a sector of a radio cell and its adjacent sectors of said other radio cells, such that

> in a sector, each of the N transmission power ranges in a sector of a radio cell is assigned to one of the N subcarrier block sets of said sector, and

> each of the N transmission power ranges is assigned to one subcarrier block set of corresponding sectors.

14.   A method for balancing the distribution of interference between radio cells in a wireless communication system, the system comprising a plurality of radio cells each of them comprising at least two sectors, wherein in each sector a plurality of subcarrier blocks is used for communication, wherein each subcarrier block comprises a plurality of subcarriers, and wherein a number of adjacent radio cells build a cell cluster, the method comprising the steps of:

grouping said subcarrier blocks into x·N subcarrier block sets in each of the sectors of each radio cell of said cluster, wherein each sector of a radio cell has N-1 adjacent sectors in the other radio cells of the cell cluster, and wherein a sector of a radio cell and its adjacent sectors in said other radio cells each comprise corresponding subcarrier block set having the same subcarriers, x being an integer number of 1 ore more, and N being an integer number of 2 or more,

determining y·N transmission power ranges for each sector of each radio cell of the cell cluster, wherein a transmission power range defines a range of transmission power levels used for transmission power control, y being an integer number of 1 ore more,

assigning the y·N transmission power ranges to the x·N subcarrier block sets of a sector of a radio cell and its adjacent sectors of said other radio cells, such that

in a sector, each of the y·N transmission power ranges in a sector of a radio cell is assigned to one of the x·N subcarrier block sets of said sector, and

y/x transmission power ranges on average are assigned to one subcarrier block set of corresponding sectors.

15. The method according to one of claims 1 to 14, wherein the communication system comprises a plurality of communication terminals communicating with base stations associated to said plurality of radio cells/sectors, the method further comprising the steps of:

measuring the path loss of a communication signal of a communication terminal and the path loss of interference from adjacent radio cells/sectors for said communication signal, and

assigning the communication terminal to a subcarrier block of a subcarrier block set in a radio cell/sector based on said measurement.

16. The method according to claim 15, further comprising the step of determining a transmission power range for said communication terminal based on said measurement, and wherein the communication terminal is assigned to a block set based on the determined transmission power range.

17. The method according to one of claims 1 to 16, wherein the transmission power ranges in different radio cells/sectors vary.

18. The method according to one of claims 1 to 17, wherein the subcarrier block set size of corresponding subcarrier block sets is equal.

19. The method according to one of claims 1 to 18, further comprising the step of reconfiguring the subcarrier block sets in a radio cell/sector of radio cell.

20. The method according to one of claims 1 to 19, further comprising the step of reconfiguring the transmission power ranges in a radio cell/sector of a radio cell.

21. The method according to claim 19 or 20, wherein the reconfiguration of the power ranges and/or the subcarrier block sets in the radio cell is performed in accordance with the other radio cells of its cell cluster.

22.   The method according to claim 19 or 20, wherein the reconfiguration of the power ranges and/or the subcarrier block sets in the sector is performed in accordance with the other sectors of its sector cluster.

23.   The method according to one of claims 19 to 22, wherein the reconfiguration is based on channel quality measurements.

24.   The method according to one of claims 1 to 23, further comprising the step of signaling information related to a reconfiguration of the subcarrier block sets in a radio cell/sector from the/its radio cell to at least one adjacent radio cell/sector.

25.   The method according to one of claims 19 to 34, further comprising the step of signaling information related to channel qualities in a radio cell/sector from the/its radio cell to at least one adjacent radio cell/sector.

26.   The method according to claim 24 or 25, further comprising the step of signaling the information to a control unit in the communication system.

27.   The method according to one of claims 15 to 26, further comprising the step of signaling information related to a subcarrier block assignment and/or a subcarrier block set assignment to a communication terminal.

28.   A base station in a wireless communication system, the system comprising a plurality of radio cells in which a plurality of subcarrier blocks is used for communication, wherein each subcarrier block comprises a plurality of subcarriers, wherein a number of adjacent radio cells build a cell cluster, the base station comprising:

      processing means for grouping said subcarrier blocks into a plurality of subcarrier block sets in each radio cell of the cell cluster,

      determination means for determining a plurality of transmission power ranges for each of the radio cell of said cell cluster,

      power control means for performing power control within a range of transmission power levels defined by one of said plurality of transmission power ranges,

      assigning means for assigning the plurality transmission power ranges to the subcarrier block sets of radio cells of the cell cluster.

29. The base station according to claim 28, wherein the radio cells of the cell cluster each comprise corresponding subcarrier block sets having the same subcarriers.

30. The base station according to claim 29, wherein said assigning means is adapted to assign said plurality transmission power ranges to the subcarrier block sets of radio cells of the cell cluster, such that

in a single radio cell, there is a mapping of each of said plurality of transmission power ranges to a subcarrier block set of said single radio cell, and

there is a mapping of each of said plurality of transmission power ranges to one of said corresponding subcarrier block sets in the radio cells of said cell cluster.

31. The base station according to claim 29 or 30, wherein said assigning means is adapted to assign said plurality transmission power ranges to the subcarrier block sets of radio cells of the cell cluster, such that

in a single radio cell, there is a mapping of each of said plurality of subcarrier block sets of said single radio cell to a transmission power range, and

there is a mapping of each of said corresponding subcarrier block sets in the radio cells of said cell cluster to one of said plurality of transmission power ranges.

32. A base station in a wireless communication system, the system comprising a plurality of radio cells in which a plurality of subcarrier blocks is used for communication, wherein each subcarrier block comprises a plurality of subcarriers, wherein N adjacent radio cells build a cell cluster, N being an integer number of 2 or more, the base station comprising:

processing means for grouping said subcarrier blocks into N subcarrier block sets in each radio cell of the cell cluster, wherein the radio cells of the cell cluster each comprise corresponding subcarrier block sets having the same subcarriers,

determining means for determining N transmission power ranges for each of the radio cell of said cell cluster,

power control means for performing power control within a range of transmission power levels defined by one of said plurality of transmission power ranges,

assigning means for assigning N transmission power ranges to the N subcarrier block sets of radio cells of the cell cluster, such that

> each of the N transmission power ranges in a radio cell is assigned to one of the N subcarrier block sets of said radio cell, and

> each of the N transmission power ranges is assigned to one subcarrier block set of corresponding subcarrier block sets.

33.   A base station in a wireless communication system, the system comprising a plurality of radio cells in which a plurality of subcarrier blocks is used for communication, wherein each subcarrier block comprises a plurality of subcarriers, wherein N adjacent radio cells build a cell cluster, N being an integer number of 2 or more, the base station comprising:

processing means for grouping said subcarrier blocks into x·N subcarrier block sets in each radio cell of the cell cluster, wherein the radio cells of the cell cluster each comprise corresponding subcarrier block sets having the same subcarriers, x being an integer number of 1 ore more,

determination means for determining y·N transmission power ranges for each of the radio cell of said cell cluster, y being an integer number of 1 ore more,

power control means for performing power control within a range of transmission power levels defined by one of said plurality of transmission power ranges,

assigning means for assigning y·N transmission power ranges to the x·N subcarrier block sets of radio cells of the cell cluster, such that

> each of the y·N transmission power ranges in a radio cell is assigned to one of the x·N subcarrier block sets of said radio cell, and

> y/x transmission power ranges on average are assigned to one subcarrier block set of corresponding subcarrier block sets.

34.   A base station in a wireless communication system, the system comprising a plurality of radio cells each of them comprising at least two sectors, wherein in

each sector a plurality of subcarrier blocks is used for communication, wherein each subcarrier block comprises a plurality of subcarriers, wherein a number of adjacent radio cells build a cell cluster, the base station comprising:

processing means for grouping said subcarrier blocks into a plurality of subcarrier block sets in each of the sectors of each radio cell of said cluster,

determination means for determining a plurality of transmission power ranges for each sector of each radio cell of the cell cluster,

power control means for performing power control within a range of transmission power levels defined by one of said plurality of transmission power ranges,

assigning means for assigning the plurality of transmission power ranges to the plurality of subcarrier block sets of a sector of a radio cell and its adjacent sectors of said other radio cells.

35.   The base station according to claim 34, wherein each sector of a radio cell has adjacent sectors in the other radio cells of the cell cluster, and wherein a sector of a radio cell and its adjacent sectors in said other radio cells build a sector cluster and each comprise corresponding subcarrier block set having the same subcarriers.

36.   The base station according to claim 35, wherein said assigning means is adapted to assign said plurality transmission power ranges to the subcarrier block sets of radio cells of the cell cluster, such that

           in a single sector of a radio cell, there is a mapping of each of said plurality of transmission power ranges to a subcarrier block set of said sector, and

           there is a mapping of each of said plurality of transmission power ranges to one of said corresponding subcarrier block sets in said sector cluster.

37.   The base station according to claim 35 or 36, wherein said assigning means is adapted to assign said plurality transmission power ranges to the subcarrier block sets of radio cells of the cell cluster, such that

           in a single sector of a radio cell, there is a mapping of each of said plurality of subcarrier block sets of said sector to a transmission power range, and

there is a mapping of each of said plurality of said corresponding subcarrier block sets in said sector cluster to one transmission power range.

38. A base station in a wireless communication system, the system comprising a plurality of radio cells each of them comprising at least two sectors, wherein in each sector a plurality of subcarrier blocks is used for communication, wherein each subcarrier block comprises a plurality of subcarriers, and wherein a number of adjacent radio cells builds a cell cluster, the base station comprising:

processing means for grouping said subcarrier blocks into N subcarrier block sets in each of the sectors of each radio cell of said cluster, wherein each sector of a radio cell has N-1 adjacent sectors in the other radio cells of the cell cluster, and wherein a sector of a radio cell and its adjacent sectors in said other radio cells each comprise corresponding subcarrier block set having the same subcarriers, N being an integer number of 2 or more,

determination means for determining N transmission power ranges for each sector of each radio cell of the cell cluster,

power control means for performing power control within a range of transmission power levels defined by one of said plurality of transmission power ranges,

assigning means for assigning the N transmission power ranges to the N subcarrier block sets of a sector of a radio cell and its adjacent sectors of said other radio cells, such that

in a sector, each of the N transmission power ranges in a sector of a radio cell is assigned to one of the N subcarrier block sets of said sector, and

each of the N transmission power ranges is assigned to one subcarrier block set of corresponding sectors.

39. A base station in a wireless communication system, the system comprising a plurality of radio cells each of them comprising at least two sectors, wherein in each sector a plurality of subcarrier blocks is used for communication, wherein each subcarrier block comprises a plurality of subcarriers, and wherein N adjacent radio cells builds a cell cluster, the base station comprising:

processing means for grouping said subcarrier blocks into x·N subcarrier block sets in each of the sectors of each radio cell of said cluster, wherein each sector of a radio cell has N-1 adjacent sectors in the other radio cells of the cell cluster, and wherein a sector of a radio cell and its adjacent sectors in said other radio cells each comprise corresponding subcarrier block set having the same subcarriers, x being an integer number of 1 ore more and N being an integer number of 2 or more,

determination means for determining y·N transmission power ranges for each sector of each radio cell of the cell cluster, y being an integer number of 1 ore more,

power control means for performing power control within a range of transmission power levels defined by one of said plurality of transmission power ranges,

assigning means for assigning the y·N transmission power ranges to the x·N subcarrier block sets of a sector of a radio cell and its adjacent sectors of said other radio cells, such that

> in a sector, each of the y·N transmission power ranges in a sector of a radio cell is assigned to one of the x·N subcarrier block sets of said sector, and

> y/x transmission power ranges on average are assigned to one subcarrier block set of corresponding sectors.

40. The base station according to one of claims 28 to 39, wherein the base station is adapted to perform of the method according to one of claims 1 to 27.

41. The base station according to one of claims 28 to 40, further comprising:

measuring means for measuring the path loss of a communication signal of a communication terminal and the path loss due to interference among adjacent sectors for said communication signal, and

the assigning means are adapted to assign the communication terminal to one of said subcarrier block sets based on said measurements.

42. A communication terminal in a wireless communication system, the system comprising a plurality of radio cells in which a plurality of subcarrier blocks is used

for communication, wherein each subcarrier block comprises a plurality of subcarriers, the communication terminal comprising power control means for performing power control between a base station of a radio cell communicating with the communication terminal, wherein the power control means is adapted to perform power control in a transmission power control range in an interval defined by a transmission power level of 0 and a maximum transmission power level.

43. The communication terminal according to claim 42, further comprising receiving means for receiving information indicating a subcarrier block assignment and/or a subcarrier block set assignment, and

selection means for selecting the signaled assigned subcarrier block and/or signaled assigned subcarrier block set for data transmission.

44. A radio communication system comprising a base station according to one of claims 28 to 41 and at least one communication terminal according to claim 42 or 43.